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THE JOURNAL OF POLITICAL ECONOMY

VOLUME 19

JANUARY—1911

NUMBER 1

ENGLAND'S WATERWAY REVIVAL

I

England has recently witnessed a movement for the revival of inland water transportation similar to that which is now attracting so much attention in the United States. The agitation began about a decade ago and reached its culmination in 1906. In the interval many scores of resolutions appeared from boards of trade and chambers of commerce; government select committees investigated the question; canal bills were introduced in Parliament, and the public press was prolific of articles showing the imperative necessity of rebuilding the waterways of the country. Dozens of projects were advocated and widely discussed; and it was urged that the imperial government should purchase the present canals, deepen and widen them, and systematize the waterways of the entire kingdom. Finally, a Royal Commission was appointed to inquire into and report on the whole question of inland water transportation. The many points of similarity to our own waterway movement, and the need for illuminating information on the subject are sufficient justification for undertaking the present study.

As in the United States, a combination of causes was responsible for the agitation. In the first place, it was generally believed that the railways, having strangled the competition of the old barge canals of the country by purchase and control and by unfair methods of competition, such as the wholesale

cutting of rates at competitive points, had monopolized the transportation of the country, and were charging exorbitant rates, to the great injury of British industry.

In the second place, the movement was ardently supported by a class of persons who hoped to be specially benefited by the rehabilitation of the waterways. When canals are constructed at the expense of the state, those shippers favorably located and dealing in commodities adapted to water transport are doubtless benefited at the expense of the many taxpayers who are not directly interested in this means of transportation.

In the third place, the fact that vast sums of money were being expended upon the canals and rivers of the continent of Europe led many persons to believe that canals would be advantageous to England in its industrial competition with other countries—and should therefore by all means be constructed.

Finally, the movement was given much support by the opinion of engineers. When once the agitation for a systematic development of the waterways of the country was aroused, it became necessary to settle the question of engineering practicability; and constructing engineers soon pronounced the rehabilitation of the waterways as fraught with no insurmountable engineering difficulties. Many persons overlooked the fact that proof of the practicability of canals from an engineering standpoint is not a demonstration of their commercial feasibility.

In England the contention was not advanced, as it is in the United States, that the railways were in need of relief from a superabundant traffic.¹ In other respects the agitation for waterways in England, as the foregoing analysis indicates, rests upon the same grounds as the waterways movement in the United States.

The Royal Commission appointed in 1906 collected evidence from representatives of canal companies, of railway companies owning or controlling waterways, from traders, merchants, manufacturers, mine-owners, agriculturists, waterway carriers,

¹ Forbes and Ashford, *Our Waterways*, chap. xii, gives a very good description of the agitation. For an article illustrating the extravagant nature of the popular arguments, see Lee, "British Canal Problem," *Journal of Society of Arts*, December, 1904.

chambers of commerce, and county and city councils. Two hundred and sixty-six witnesses submitted testimony.² The report fills eleven large Blue Books, and is of great importance because it furnishes us with practically the only reliable data on British waterways. The present study is consequently based largely upon the evidence collected by the commission. It has been supplemented, however, by a personal investigation of transportation conditions in the United Kingdom.

II

The canals of Great Britain have fallen into a state of decay almost as serious as that of canals in the United States, and the history of the decline of water-borne traffic in the two countries is strikingly parallel. Until about 1850 England's widely ramifying system of privately owned barge canals enjoyed an unusual degree of prosperity, but the rapid development of the railways after the middle of the century sealed the fate of water transport. Between 1850 and 1880 practically all the traffic in goods of considerable value and in goods requiring speed in delivery disappeared from the waterways. Only bulky, low-class freight remained to them, and even this fell off with great rapidity. Statistics for the early years were rarely collected, but evidence submitted to a Select Committee on Canals (1881-83) showed the coal movement in the years 1852 and 1882 from the Midlands and the north of England to London to be as follows:³

	1852	1882
Carried by canals . . .	33,000 tons	7,900 tons
Carried by railways ..	317,000 tons	6,546,000 tons

Since coal now comprises about 45 per cent of all the canal traffic of the country⁴ this decline may be regarded as peculiarly significant. The absolute decline in the coal tonnage of the canals is more than 75 per cent while the increase in the coal tonnage of the railways is more than twenty fold.

² *Report of Royal Commission*, VII, 1.

³ Pratt, *British Canals* (1906), 81.

⁴ *Report of Royal Commission*, 61.

For the last twenty years the statistics are somewhat more accurate. The commission has prepared a table giving the tonnage and the revenue for all the waterways of England and Wales on which returns were obtainable, as follows:⁵

Miles	Year	Total Tonnage	Total Gross Revenue	Total Expenditures	Total Net Revenue
2,416. }	1888	33,123,666	\$9,122,965	\$5,840,925	\$3,282,040
	1898	34,022,493	9,275,530	6,845,950	2,429,580
	1905	32,340,204	9,553,560	7,237,975	2,315,585

From 1888 to 1905 the total net revenue declined nearly a third. In 1905 the net revenue per mile of waterway amounted to \$845, including rents from property owned by canal companies.⁶ If this amount were applied in the payment of dividends the rate on the total capitalization of the waterways would equal one and two-thirds per cent.⁷ The fact is that only in rare instances are earnings distributed to shareholders. The scanty profits are usually devoted to improvements.

It is now practically everywhere recognized that the advantages offered by railways in the way of speedy and certain delivery are a sufficient explanation of the diversion from the waterways of what is known as high-class freight. On the other hand, it is generally contended that low-class freight, by its very nature, is adapted to water transport. It will therefore be of interest to discover why it is that the waterways have lost the greater part of the bulky, low-class traffic of Great Britain.

By far the most important coal traffic in England is that from the Midlands and the North of England to London. Of the total amount shipped in 1905 from these two regions to the metropolis, 7,137,473 tons were sent by rail, as against 18,681 tons by canal.⁸ Though the waterways connect directly with all the important collieries, they carried only one five-hundredth as much coal as the railways. Why are they unable to compete for this traffic?

Coal is shipped to London for three main purposes: for fuel

⁶ *Ibid.*, IV, 3.

⁷ *Ibid.*

⁸ *Ibid.*, 49.

⁸ *Ibid.*, VII, 66.

in ocean-going vessels, for fuel in industrial establishments, and for household consumption. Now, in supplying ships neither the railways nor the waterways can compete with the open sea route to London. This coal can be brought to London in large boats in vast quantities and unloaded directly into the holds of vessels bunkering for long ocean voyages. The competition of the railways and the canals is mainly confined to such coal as is used in factories and for household consumption.

In supplying industrial establishments with fuel it appears from testimony gathered by the commission that the railways possess a very great advantage as compared with the canals. If brought by water, the coal must first be carted, or carried by rail, for a considerable distance from the mines to the banks of the waterway. Upon arrival in London it must be unloaded from the boats into carts upon the wharves and trucked for perhaps miles across the city to its place of destination. On the other hand, if shipped by rail, it can be loaded directly into cars stationed on sidings at the very mouths of the mines, and carried without transshipment to destination. By means of sidings it may be taken directly to the factories, thus eliminating all intermediate handling. Even though it be carted in London, there is still a considerable saving. The carts can be backed against the railway trucks and the coal unloaded at much less expense than where it must be lifted up out of a canal boat to carts on the bank of the waterway. These savings in transshipment are enough to give the railways a virtual monopoly of this sort of traffic.

In the case of coal for household consumption, there are additional factors to be considered. Much the greater part of this coal is handled in London by small dealers. With these men, as with retailers generally, a small stock and a rapid turnover are essential to a profitable business. Consequently, their orders are for small quantities at a time, and for prompt delivery. Mr. Bury stated before the commission that the Great Northern Railway Company, with which he is connected, once constructed some large railway cars able to carry from thirty to thirty-five tons of coal each, but the traders "would not look at them.

The ordinary order for house coal is from a householder whose cellar does not hold more than eight or ten or twelve, tons, and he wishes it in these amounts."⁹ Consequently, the small railway truck is of very convenient size to meet the needs of these shippers. The capacity of the barges on the present waterways is from thirty to fifty tons. The same objection obviously applies to their use as to that of the large railway cars. The reason for the predominance of small shipments is to be found in the prohibitive cost to small dealers of providing warehousing or storage space in crowded London.

Again, breakage of coal is much more serious in barges than in small railway cars. Mr. A. C. Briggs, a prominent railway man, stated before the commission that there is only about one-half the breakage in railway cars that there is in canal barges. He explained that while the broken coal can be disposed of for various purposes, it must be at a price reduction of from three to fifteen shillings a ton.¹⁰ Loss from breakage, extra storage room, and extra handling, both in London and in the colliery districts, constitute, then, the handicaps which render the traffic of the waterways in house coal almost a negligible quantity.

Similar conditions exist in greater or less degree in all the large cities of England. In at least some of the coast cities it seems that the railways often afford still another convenience. A prominent railway man stated before the commission that in coastal cities railway cars are often used for weeks at a time as storehouses for coal, pending sale or shipment abroad.¹¹

Building materials are usually regarded as certain waterway traffic, but we find that in England such commodities as stone, brick, timber, tiles, drain-pipes, and road materials are not infrequently carried more advantageously by rail than by water. For instance, a London builder in the heart of the city, who secures his materials from Yorkshire, must, if they are shipped by canal, have them carted several miles across the city from the terminus of the Grand Junction Canal at Limehouse, where they are unloaded, to the site of the building operations. Since he can

⁹ *Ibid.*, 223.

¹⁰ *Ibid.*, 224.

¹¹ Testimony of Mr. Fay, *ibid.*, 80 (footnote).

secure them more speedily by rail and have them delivered near at hand, he is practically never disposed to make use of the waterways.¹²

Again, the size of the shipments of building materials is often an important factor, as in the case of coal. An instance of this in the brick traffic between Peterborough and London was cited to the commission by Mr. Bury. "The traffic amounted to about one million tons a year, and formed a suitable material for large railway wagons; but the consignees would not accept large consignments on the site where the bricks were required, and neither would they agree to the bricks being unloaded and stacked at the station, inasmuch as double handling would be necessary, the cost of which the consignees were not prepared to bear."¹³ It is apparent, therefore, that the barge load of thirty or forty tons is not adapted to the needs of these shippers. The small carload of eight or ten tons is convenient; hence the railways secure the traffic.

The northern counties of England constitute the greatest cotton manufacturing district in the world. It might be supposed that, since practically all the inland manufacturing towns have waterway communication with the great entrepôt of Liverpool, the bulky raw cotton would be distributed to the manufacturing districts by means of canal barges. The fact is, however, that nearly all the cotton is carried inland by rail. The size of the cargo preferred by the shippers seems here also to be the decisive factor. The spinners do their business on a comparatively small scale. They prefer an arrangement whereby they may telegraph or telephone to Liverpool for the amount of raw cotton required from time to time. If it were brought in barge loads of thirty or forty tons, warehousing facilities would be required for the surplus which could not be immediately used. Rather than incur this expenditure, and at the same time tie up capital in stored cotton, the cotton men naturally prefer to use the small railway car, which can promptly deliver the goods in the quantities desired.

¹² Pratt, *Railways and Their Rates*, 343.

¹³ *Report of Royal Commission* (minority report of Mr. Inglis), VII, 225.

Agricultural commodities are among those commonly regarded as adapted to water transportation. The commission, however, reports that the agricultural produce carried by English canals is insignificant in quantity. "The Grand Junction Canal, for instance, passes across nearly one hundred miles of farm lands in order to reach London. In 1905 it carried but 5,812 tons of agricultural produce out of a total canal traffic of 1,794,233 tons."¹⁴

The reasons presented by the commission in explanation of this condition are as follows: first, the farmers buy and sell their commodities in small quantities, and they find the railways more convenient; second, the farm roads lead to the railway stations and loading places, and do not connect with the canals; third, canal transportation is too slow for the daily deliveries of the products of the dairy, in which there is a large traffic in England. Finally, the warehousing facilities along the canals are hopelessly inadequate to meet the needs of the farmers.¹⁵

III

In the foregoing paragraphs we have presented the causes of the decline of traffic on the canals of Great Britain, basing our conclusions almost entirely on evidence contained in the commission's report. But in spite of the apparent conclusiveness of the above evidence the commission has assigned as the two chief factors in the failure of the waterways to retain their former position in the transportation of the country, the lack of organization and systematization of the waterways, and the unfair competitive methods employed by the railroads.

As to the first of these factors, it is to be borne in mind that the canals, in the early part of the nineteenth century, possessed a virtual monopoly of transportation in England. They possessed, therefore, the great competitive advantages of an established trade. The railways, on the other hand, possessed nothing except inherent possibilities. Overcoming the tremendous handicap of the long lead gained by the canals, the railroads suc-

¹⁴ *Ibid.*, VII, 62.

¹⁵ *Ibid.*, *loc. cit.*

ceeded in a surprisingly short time in diverting from the canals the greater part of their traffic and in gaining the complete ascendancy. Since English canals were privately owned, there was unquestionably every incentive to keep them in a condition to compete successfully with the railways. The canal owners, facing the possibility of a destruction of their vested interests, cannot reasonably be regarded as having been apathetic in regard to the future of the waterways. The canal companies lacked a systematic organization, it is true, but it must be remembered that in 1850 the railways were equally unorganized. The railway men had to build up the great systems which today exist. They had to provide themselves with extensive warehousing facilities and costly terminals. With the same incentive and the same free opportunity, why did not the canal men at least keep pace with the railway men in these improvements? When the self-binder displaced the old reaper and cradle in the harvesting of grain men accepted the fact as proof of the superiority of the binder. When canals defeated the old stage roads in the carrying of traffic it was readily enough admitted that the former had demonstrated their greater efficiency. The decline of the waterways is at least presumptive evidence that in the process of evolution the railways have demonstrated their inherent superiority over the canals in the business of transportation.

We may now consider the second factor to which the commission assigns the decline of water transportation, namely, that the railways have purchased many of the canals of the country, and have contrived to strangle competition. Mr. Inglis, in his minority report contributes some interesting information as to the reasons for the purchase of canals by the railway companies. He says, "The scared canal companies themselves sought to safeguard their own interests, as far as they could, at the expense of the railways. In some cases such pressure was brought to bear on the railway companies that they were compelled to take over certain canals as a condition of getting authority to construct their proposed lines. In other cases the canal companies obtained Parliamentary powers for building railways with the express design of compelling the railway companies to buy them

out. In still other cases the railways deemed it prudent to purchase, to take over, or to guarantee the interests of canal companies without being actually forced so to do. But whatever the precise reason, the canals were not in the great majority of cases voluntarily acquired by the railway companies."¹⁶ Mr. E. A. Pratt in his book on British Canals has made the same contention, and he quotes from the general manager of the Great Western Railway, which owns more canals than any other railway company, to the effect that "his company owned about 216 miles of canals, not a mile of which had been acquired voluntarily. Many of these canals had been forced upon the railways as the price of securing acts, and some had been obtained by negotiation with the canal companies. The others had been acquired in incidental ways, arising from the fact that the traffic had absolutely disappeared."¹⁷

Even if it should be shown that the railways dealt unfairly with the canals, the fact would furnish no argument for the reconstruction of the canals. In the case of neglected governmental waterways there might, possibly, be some occasion for contending that the fight for supremacy had not been won by the naturally most efficient agent of transportation.

Where, however, perfect freedom of competition has existed, as in England, such a contention cannot fairly be made. One might rather have expected to see the canals purchase or cripple the newly developed railways, than the reverse. That the railways were able to enter an already appropriated field and in a few years completely dominate the transportation business would seem to be very strong evidence of their inherent superiority over canals.

IV

The commission was asked to inquire into the probable cost of improving four main water routes as a start in a program of reconstruction, and to report on the feasibility of such a project. The four trunk lines of the proposed system would radiate from Birmingham in the Midlands of England and extend to the four

¹⁶ *Ibid.*, (minority report of Mr. J. C. Inglis), VII, 207.

¹⁷ Pratt, *British Canals*, 38.

corners of the country, reaching the estuaries of the Thames, Mersey, Severn, and Humber rivers respectively. They would unite practically all the principal coal and mineral regions of England and connect directly with the four great seaports of London, Liverpool, Bristol, and Hull, and with the Manchester Ship Canal extending from Liverpool to the great inland port of Manchester. There can be no question that these routes are well chosen and that, if any, these are the ones which should be reconstructed.

The commission estimates that the cost of enlarging the four canals sufficiently to float three-hundred ton barges would be \$122,569,115.¹⁸ These figures, however, represent only the estimated cost of digging the canals proper, and are admittedly far from including all the necessary items of expense. They do not include the cost of maintaining an adequate water supply, of providing wharves, warehouses, and terminal facilities, or of any of the incidental parliamentary, legal, and engineering work; and they do not cover the cost of building the necessary boats. The cost of providing an adequate water supply was stated by the commission to be several millions. Land for wharfage and terminals in the metropolitan districts of England costs tremendously, and the construction of docks and of terminals in a manner that would place the waterways on an equal footing with modern railways would involve an outlay of many millions. It is quite impossible to estimate accurately the total eventual cost, but it seems not unlikely that it would exceed \$200,000,000.¹⁹

The commission was instructed to ascertain the prospect of "benefit to the trade of the country compatible with a reason-

¹⁸ *Report of Royal Commission*, 145.

¹⁹ This estimate, moreover, does not cover the cost of building branch lines, which the commission states are indispensable to the success of the scheme. It is estimated that at least 574 miles of branches would be necessary, as against 542 miles of main line (p. 155). Since the branches must be of the same size as the main lines, if costly transshipments are to be avoided, and since they would require extensive docks, warehouses, and terminals, it is apparent that they would cost practically as much as the main lines themselves. Including these raises the total cost to something like \$400,000,000.

Mr. J. B. Firth in the *Fortnightly Review* for April, 1910, estimates that the total cost would probably reach a total of \$500,000,000.

able return upon the probable cost." Having considered the probable cost, we may pass now to the question of traffic, which is the crucial consideration in the whole canal problem. Many persons, while acknowledging that the waterways in their present state are inferior to the railroads as transporting agents, still contend that large and adequately equipped canals can turn the tables on the railroads and redivert to themselves vast quantities, if not all, of such traffic as is of a bulky nature. In the following pages we shall test the truth of this contention so far as England is concerned, and at the same time attempt to discover whether the resuscitation of English canals is economically advisable.

On the basis of a total cost of \$122,569,115 (the commission's estimate) for the four main routes of waterway, it was computed that when the canals were in operation the annual government expenses on account of maintenance and administration charges and loss of interest would amount to \$4,825,000.²⁰ The next step was to ascertain the amount of traffic necessary to yield a net revenue equal to this sum; and it was found that "at 0.2 pence per ton-mile the total ton-mileage of traffic required will amount to 1,158,000,000."²¹ Since the existing traffic may fairly be regarded as certain to continue on the improved waterways, in order to find the increased tonnage necessary, we may subtract the present tonnage from the above-estimated totals. "The existing tonnage on these waterways amounts to about 16,600,000 tons. If it is assumed that the average travel is 12 miles, the present traffic amounts to 199,200,000 ton-miles. Additional traffic would, therefore, be required amounting to 958,000,000 ton-miles to meet the total expenditure, when in the course of years the whole scheme of improvements had been completed."²²

Since we have found that the total cost of the improvements would probably be \$200,000,000, it follows that nearly twice the

²⁰ *Report of Royal Commission*, VII, 157.

²¹ *Ibid.* This rate of 0.2 pence is the government toll. For the total cost to the shipper the haulage charge must be added to this amount.

²² *Ibid.*

above-estimated traffic would be necessary to cover the annual outlays, or in the neighborhood of 2,000,000,000 ton-miles a year. What are the probabilities of so heavy a traffic being developed?

In an effort to ascertain how great an increase of traffic might be expected, questions were sent out by the commission to manufacturers, mine owners, and other traders along the main routes, asking how large an amount of freight they would be likely to ship over improved waterways. The replies returned were far from encouraging. The commission reports that "it cannot be said that these replies elicited very numerous or exact assurances of traffic. The most important results of these inquiries were the replies sent by the Erewash Valley coal owners in the Nottingham district, and by coal owners in the South Staffordshire and Warwickshire districts. These replies indicate that, if there were a reduction of 50 per cent in the total cost of transport per ton per mile, 3,000,000 tons of coal per annum might be sent to London by inland water route from these two districts alone."²³ The maximum amount, promised on the condition of a 50 per cent reduction in charges, was 4,220,912 tons for route I.²⁴ For the other routes there were no assurances.

If we assume an equal tonnage on each of the other routes, and assume the average haul to be fifty miles (it is at present only 12 miles) we may compute a total ton-mileage of 250,000,000. This is little more than one-fourth the amount (958,800,000 ton-miles) estimated by the commission as necessary to cover the annual charges on the partial cost estimate of \$122,000,000. It is only about one-eighth the amount (2,000,000,000 ton-miles) given in our estimate above.²⁵

²³ *Ibid.*, p. 160.

²⁴ *Ibid.*, *loc. cit.*

²⁵ It does not appear from the commission's report to what extent the promised increase of traffic is contingent upon the existence of adequate feeders to the main lines. In case a large part of this traffic is dependent upon the existence of branch lines (which is more than probable), it is evident that the promised tonnage is much less adequate to cover the charges than appears above. If the traffic must be enough to cover the charges on the greater part of \$400,000,000, the probable cost when the branch lines are included, the situation appears still more hopeless.

Since the above traffic estimates are contingent upon a 50 per cent reduction in freight rates, it is pertinent to inquire as to the probability of so large a reduction in charges. In regard to coal, the commission states that "the total rate, including toll and haulage at which coal can at present be conveyed by waterway from a colliery in Leicestershire to Paddington (a London station) is about \$1.60 per ton, almost the same as its conveyance by rail. Of this cost 60 cents is due to tolls charged at the locks, and \$1.00 is for haulage. It has been calculated that, on an improved water route, allowing the passage of boat trains conveying 220 tons of coal at a time, the toll being reduced to 56 cents by a reduction of the actual mileage, the total cost of transport could be reduced from \$1.60 to about 92 cents per ton."²⁶ This is a reduction of 42.5 per cent from the present water, and from the present railway rate on such traffic. These, however, are merely haulage and toll charges. In estimating the total costs by water for the purpose of comparison with the present inclusive railway charges, Mr. Inglis, in his minority report, adds to the above figures several items of great importance, as follows:

Conveyance from pit to canal, and tolls or haulage on Thames or	
Regent's Canal in London (not included above).....	24 cents
Deterioration by breakage.....	12 cents
Extra cost of unloading.....	12 cents
Extra cost of cartage in London (average).....	36 cents
Total.....	84 cents

Adding 84 cents to the commission's estimate of 92 cents for haulage and tolls, we have a total transportation charge from mine to market of \$1.76, or more than the present inclusive cost by rail. If these incidental charges be not overestimated, it follows that the improved waterways would secure neither an increased water traffic nor a lowering of freight rates through potential competition.

Still another very interesting and very important consideration presents itself in connection with the question of traffic.

²⁶ *Ibid.*, 159.

The commission has stated that if so large an increase of traffic should result as the 3,000,000 tons of coal from the Erewash mines, which was promised contingently upon a 50 per cent reduction in charges, it would involve additional construction expenditures upon the canals in the duplication of locks, etc. This raises at once the whole question of the capacity of the proposed waterways. We have seen that the necessary tonnage, if the canals are to be profitable, must be many times 3,000,000 tons. If the proposed canals would not be large enough to carry an increase of 3,000,000 tons a year, how much must they be enlarged to carry an increased traffic of twelve or fifteen times that amount? Obviously construction expenses would greatly exceed the estimates given above; and this would necessitate a corresponding increase in traffic over the amount estimated if the project is to be made to pay.

One need not look far to find the reasons why the shippers should refuse to use the enlarged waterways, even though they should effect so large a rate reduction as 50 per cent. To understand their attitude it is only necessary to recall the reasons why the present waterways are unused. In the case of coal, the canals would obviously still be unable to compete for that which now travels from the northern coal fields to London by sea. As against the railways, the canals would continue under the handicap imposed by the necessity of transshipments, and barges of three hundred tons' capacity would be much less adapted to the needs of small shippers than those of thirty tons. Finally, the loss from breakage in the larger barges would be much increased.

In the case of building materials, we found that cartage charges from canal to place of destination in the city were often prohibitive, and that the demand was very frequently for small allotments in order to save space on the site where the materials were to be used, or the cost of double handling if stacked along the canal awaiting delivery. Three-hundred-ton barges would only aggravate the latter disadvantage, and they would not lessen the prohibitive cartage costs.

Cotton is ordered as we have seen in small amounts and

shipped by rail from Liverpool to its place of destination. It is not carried extensively either upon the small canals or upon the Manchester Ship Canal; no more would it be shipped upon canals of three hundred tons' capacity.

In the case of agricultural produce, the dearth of storage facilities along the present routes might be removed, but the macadamized roads of England cannot be expected to change their present location, and three-hundred-ton boats would be less adapted to the farmers' requirements than the present small barges.

The future of British waterways appears, therefore, utterly devoid of promise. There is almost no chance that the proposed improvements will ever be undertaken. To use the words of a recent writer in the *Fortnightly Review*, "Another Royal Commission has expended time and labour on a forlorn hope, and has only succeeded in recommending to the public—and that in a half-hearted manner—a project for the expenditure of millions which no responsible government would ever dare to lay before the House of Commons."²⁷

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²⁷ J. B. Firth, *Fortnightly Review* (April, 1910), 755. It was not until after the present study was completed that the writer learned of Mr. Firth's article. Mr. Firth's conclusions, in practically every particular, confirm those that I have presented.